



Potentially Preventable Hospitalizations Program Surveillance Report - Texas June 2016

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Introduction

Potentially Preventable Hospitalizations (PPH) are hospital admissions for certain acute illnesses and chronic conditions that may be avoided with appropriate outpatient treatment and disease management. Lack of access to healthcare and poor-quality care lead to increases in these types of hospitalizations. PPHs are also referred to as *Ambulatory Care Sensitive Conditions*, *Prevention Quality Indicators* (PQIs), and *Potentially Preventable Admissions/Events*.

Methodology to identify PPHs was developed by the Agency for Healthcare Research and Quality (AHRQ). AHRQ is the lead federal agency responsible for research on healthcare quality costs, outcomes and patient safety. The hospitalizations are geographically identified by the residence of the patient—not the location where they were hospitalized.

PPH illnesses and conditions are identified by their primary diagnosis in the hospital. The most common chronic conditions that result in preventable hospitalizations are: angina, congestive heart failure (CHF), hypertension, chronic obstructive pulmonary disease (COPD) and asthma in older adults, diabetes short-term complications, and diabetes long-term complications. The most common acute illnesses that result in preventable hospitalizations are: bacterial pneumonia, dehydration, and urinary tract infection (UTI).

This report analyzes **adult** potentially preventable hospitalizations data. Hospitalizations of children are not included. Not all of the PPH conditions identified by AHRQ are included in this report. For a complete list, please visit the AHRQ website. (See page 18) PPH chart and table totals appearing in this report are not meant to be utilized as composite indicators.

PPH data and trends may be used as tools to improve the outpatient healthcare system and population health. Although these indicators are based on hospital inpatient data, they provide insight into community resources and services outside the hospital setting, and are markers of health system efficiency and efficacy. This information is not meant to be used as an evaluation of particular hospitals or other healthcare providers.

The Texas Potentially Preventable Hospitalizations Program

DSHS approved a Project Charter in January 2008 to support community assessment projects using PPH data. An Exceptional Item proposal was developed in 2010 to provide resources to reduce PPH rates. In June of 2011, the 82nd Texas Legislature approved \$2 million for preventative hospitalization projects through a rider to the appropriations bill.

In August of 2011, DSHS sent a Request for Information to the county governments of Texas announcing funding to reduce hospitalizations and costs for adult PPH conditions by implementing interventions through a community coordinated approach. The 92 counties eligible to respond were those that had a hospitalization rate more than 50% higher than the state rate for at least one PPH condition from 2005-2009; and had a population of less than 100,000 residents between the ages of 18 and 64. DSHS was able to provide funding to 16 of the applicants: Angelina, Brooks, Ector, Grayson, Hunt, Liberty, Limestone, Nacogdoches, Orange, Polk, Red River, San Augustine, Tom Green, Trinity, Victoria, and Walker. The first contract period was January 1, 2012 – August 31, 2013.

DSHS re-contracted with 13 of the 16 counties for the period of September 1, 2013 – August 31, 2015. (Hunt, Liberty and Nacogdoches counties dropped out of the project.) With \$2 million available in Fiscal Years 2013 and 2014, the reduced number of funded counties added a condition of focus. The chart below shows conditions targeted by each of the 13 counties by August 2015:

Counties Contracting with DSHS	PPH Conditions County Projects Targeted prior to 9/1/15
Angelina	Bacterial Pneumonia, Dehydration, Hypertension, UTI
Brooks	Bacterial Pneumonia, Dehydration
Ector	Asthma, COPD, Diabetes
Grayson	Bacterial Pneumonia, COPD, Dehydration, UTI,
Limestone	Bacterial Pneumonia, CHF, COPD
Orange	Angina, Bacterial Pneumonia, CHF, COPD
Polk	Bacterial Pneumonia, CHF, COPD, Dehydration
Red River	CHF, COPD, Diabetes
San Augustine	Bacterial Pneumonia, Hypertension
Tom Green	Bacterial Pneumonia, COPD, Dehydration, UTI
Trinity	Bacterial Pneumonia, COPD, Hypertension, UTI
Victoria	Angina, Bacterial Pneumonia, CHF, Diabetes
Walker	Asthma, Hypertension, Diabetes

The PPH Initiative transferred from the Center for Policy and External Affairs to the Health Promotion and Chronic Disease Prevention Section in September 2015. The PPH Program operates with a funding level of \$2 million available for the 24-month period of September 1, 2015- August 31, 2017. The previously funded 13 counties continue participating. To make the greatest impact with limited resources, all counties are currently focusing on the highest-cost PPH conditions in Texas: CHF, COPD, and short and long-term diabetes complications. Each county is implementing four interventions to address the conditions: patient education, patient case management, healthcare provider education, and community education. Cross-cutting activities include immunizations, medication access, smoking

cessation, nutrition, physical activity, weight reduction, glycemic control, and blood pressure control.

The PPH Program is dedicated to providing technical assistance and support to local governments and other entities seeking to improve health care quality, reduce health care costs, and lower preventable hospitalization rates in order to improve the quality of life, health and wellbeing for Texans and their families. The PPH Surveillance Report is one of the tools available to advance our mission.

Definitions

1. **Bacterial Pneumonia** is an infection of the lungs that can cause mild to severe illness. It can often be prevented with vaccines and can usually be treated with antibiotics or specific drug therapies.
2. **Dehydration** means the body does not have enough fluid to function normally. Dehydration impacts older adults or institutionalized individuals who have a limited ability to communicate thirst. The condition commonly results from diarrhea and vomiting due to illness. People working outdoors in extreme heat conditions are also susceptible. Vulnerable people need to drink extra non-caffeinated fluids to keep from getting dehydrated. Mild fluid loss can most often be treated at home, but severe dehydration must be treated in the hospital.
3. **Urinary Tract Infection (UTI)** is usually caused when bacteria enter the bladder and cause inflammation and infection. UTIs are among the most common infections in people, and is usually treated with antibiotics. UTIs are the most common type of healthcare-associated infection. Among UTIs acquired in the hospital, approximately 75% are associated with a urinary catheter.
4. **Angina** (without procedures) is a symptom of coronary artery disease. Pain or discomfort in the chest, shoulders, arms, neck, jaw, or back; or a feeling like indigestion occurs because the heart muscle is not getting enough blood. Angina and other heart diseases can be prevented and treated by healthy lifestyle improvements and managing health conditions.
5. **Congestive Heart Failure (CHF)** happens when the heart cannot pump enough blood and oxygen to support other organs in the body. Early diagnosis and treatment can improve quality and length of life for people who have heart failure. Treatment usually involves **taking medications, reducing sodium** in the diet, and getting **daily physical activity**.
6. **Hypertension** (High Blood Pressure) is measured by the force of blood against your artery walls as it circulates through your body. Blood pressure normally rises and falls throughout the day, but it can cause health problems if it stays high for a long time such as heart disease and stroke. Hypertension can be controlled with prescribed medications and lifestyle changes.
7. **Chronic Obstructive Pulmonary Disease (COPD) or Asthma in Older Adults (age 40+)** refers to a group of diseases that cause airflow blockage and breathing-related problems. It includes emphysema, chronic bronchitis, and some cases of asthma. COPD treatment requires an individualized plan with multiple components that may include smoking cessation, medication, pulmonary rehabilitation, vaccination, oxygen supplements, etc.
8. **Diabetes** is a disease in which blood glucose levels are above normal. The pancreas makes a hormone called insulin to help glucose get into the body's cells. With diabetes, the body either doesn't make enough insulin or can't use its own insulin as well as it should, causing sugar to build up in the blood. A healthy food intake balanced by daily physical activities is the basic therapy for diabetes. Blood glucose levels must be closely monitored through frequent blood glucose testing. Insulin injections and/or oral medication are needed as well.

- a. **Short-term Complications** occur as a result of uncontrolled blood sugar levels. Ketoacidosis and hyperosmolarity occur from excessively high blood sugar levels. Dangerously high blood sugar (hyperglycemia) or dangerously low blood sugar (hypoglycemia) can lead to a coma.
- b. **Long-term Complications** are when renal, eye, neurological, circulatory, or not otherwise specified complications occur due to poor control of blood sugar levels over a period of time.

Note: definition sources are the Centers for Disease Control website and the Agency for Healthcare Research and Quality website. See **Related Links** on page 18.

Key Findings

- Black adults were disproportionately affected by hypertension hospitalization. In Texas overall, black adults make up 11.6% of the population but accounted for 30.8% of potentially preventable hospitalizations for hypertension.
- White non-Hispanic adults were disproportionately affected by hospitalization for COPD or asthma among older adults. In Texas overall, White non-Hispanic adults make up 46.4% of the population but accounted for 66.2% of potentially preventable hospitalizations for COPD or asthma among older adults.
- Hispanic adults were disproportionately unaffected by COPD or asthma among older adults hospitalization. In Texas overall, Hispanic adults make up 36.0% of the population but accounted for 14.6% of potentially preventable hospitalizations for COPD or asthma among older adults.
- More than half (57.8%) of hospitalizations for diabetes short-term complications occurred among adults in the youngest age category (age 18 to 44 years), while nearly half (47.8%) of hospitalizations for diabetes long-term complications occurred among adults age 45 to 64 years.
- Almost half of hospitalizations for congestive heart failure were among adults age 75 and older.
- COPD or asthma in older adults had the highest risk-adjusted hospitalization rate compared to each of other PPH conditions in Texas.
- Angina had the lowest risk-adjusted hospitalization rate compared to each of other PPH conditions in Texas.
- Congestive heart failure had the highest total charge amount at \$2.6 billion and the highest charge per adult Texas resident at \$135.
- Medicare was the most common primary payer source for each potentially preventable hospitalization condition except for diabetes short-term complications.

Demographics (Race/Ethnicity and Gender), Texas Overall and Potentially Preventable Hospitalizations (PPH), 2014

Table 1 – Texas Demographics by Race/Ethnicity and Gender, 2014

	White Non-Hispanic		Black Non-Hispanic		Hispanic		Other		Total	
	N	%	N	%	N	%	N	%	N	%
Texas	9,195,828	46.4	2,288,450	11.6	6,867,940	36.0	1,137,347	6.0	19,807,327	100.0

	Male		Female		Total	
	N	%	N	%	N	%
Texas	9,742,110	49.2	10,065,217	50.8	19,807,327	100.0

Table 2 – PPH Demographics by Race/Ethnicity and Gender, 2014

PPH Conditions	White Non-Hispanic		Black Non-Hispanic		Hispanic		Other		Male		Female	
	N	%	N	%	N	%	N	%	N	%	N	%
Diabetes Short-term	5,737	43.1	3,316	24.9	3,576	26.9	683	5.1	6,337	47.4	7,038	52.6
Diabetes Long-term	9,164	39.4	4,223	18.1	8,591	36.9	1,298	5.6	13,400	57.3	9,986	42.7
COPD/Asthma in Older Adults	28,542	66.2	6,152	14.3	6,276	14.6	2,141	5.0	16,631	38.3	26,783	61.7
Hypertension	3,963	39.0	3,126	30.8	2,510	24.7	561	5.5	3,967	38.9	6,234	61.1
CHF	30,090	51.3	12,418	21.2	12,731	21.7	3,370	5.8	29,271	49.7	29,618	50.3
Dehydration	13,322	59.1	3,203	14.2	4,853	21.5	1,183	5.2	9,673	42.6	13,061	57.5
Bacterial Pneumonia	25,404	62.5	4,453	11.0	8,315	20.4	2,509	6.2	18,247	44.5	22,773	55.5
UTI	18,001	56.9	3,376	10.7	8,434	26.6	1,845	5.8	8,023	25.2	23,869	74.8
Angina	886	50.3	250	14.2	523	29.7	103	5.9	812	45.9	957	54.1

Note: The four highlighted conditions were selected for FY 2016 - 2017.

Figure 1 - Percentage of Texas Adults by Race/Ethnicity, 2014

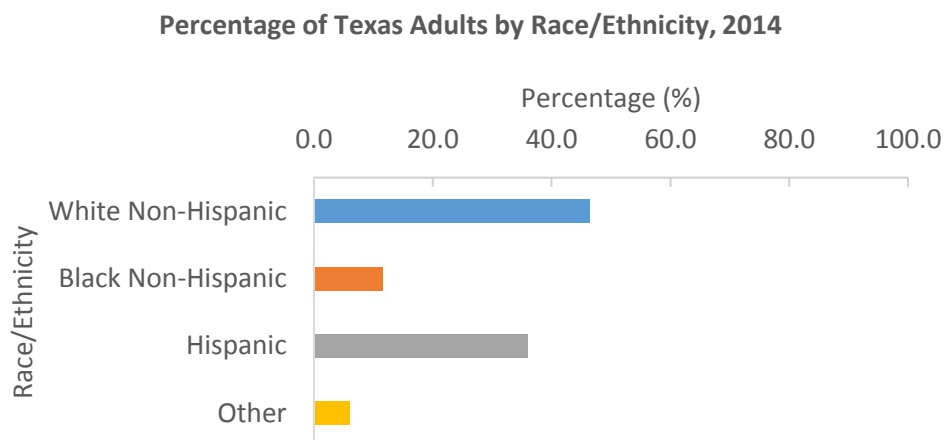
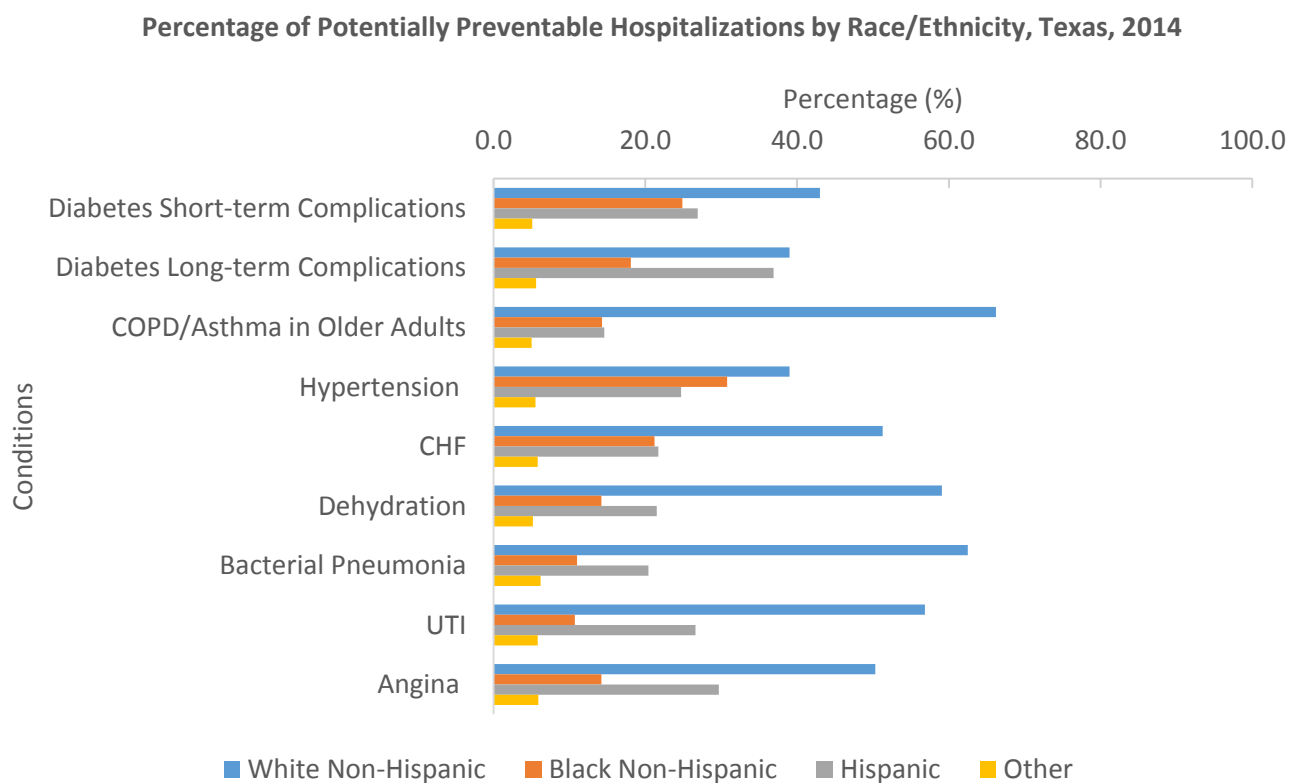


Figure 2 - Percentage of PPH by Race/Ethnicity, 2014



Demographics (Age Groups), Texas Overall and Potentially Preventable Hospitalizations (PPH), 2014

Table 3 - Texas Demographics by Age Groups, 2014

	18-44 Years		45-64 Years		65-74 Years		75+ Years		Total	
	N	%	N	%	N	%	N	%	N	%
Texas	10,270,688	51.9	6,454,547	32.6	1,843,676	9.3	1,238,416	6.3	19,807,327	100.0

Table 4 – PPH Demographics by Age Groups, Texas, 2014

	18-44 years		45-64 years		65-74 years		75+ years	
PPH Conditions	N	%	N	%	N	%	N	%
Diabetes Short-term	7,735	57.8	4,242	31.7	866	6.5	532	4.0
Diabetes Long-term	4,019	17.2	11,181	47.8	4,579	19.6	3,607	15.4
COPD/Asthma in Older Adults	1,253	2.9	15,782	36.4	12,643	29.1	13,736	31.6
Hypertension	1,705	16.7	4,016	39.4	1,816	17.8	2,664	26.1
CHF	3,023	5.1	16,090	27.3	13,630	23.2	26,146	44.4
Dehydration	2,949	13.0	5,933	26.1	4,874	21.4	8,978	39.5
Bacterial Pneumonia	4,380	10.7	10,822	26.4	8,691	21.2	17,127	41.8
UTI	4,879	15.3	6,193	19.4	5,486	17.2	15,334	48.1
Angina	196	11.1	846	47.8	370	20.9	357	20.2

Note: The four highlighted conditions were selected for FY 2016 - 2017.

COPD/Asthma in Older Adults is only among adults age 40 and over.

Number of Potentially Preventable Hospitalizations (PPH) and Risk Adjusted Rates, 2014

Definition of Risk Adjusted Rate: The risk adjusted rate allows us to compare communities that are different in their age and gender distribution. Risk adjusted rates statistically compensate (or adjust) for risk factor differences in two communities so that the outcome rates (here PPHs) can be compared legitimately despite the differences. In this report we have adjusted the rate for age and gender as those are identified as the risk factors that influence the PPHs.

For example, County A has 100 COPD hospitalizations, while County B has 200 COPD hospitalizations in the same year. This may lead to misinterpretation that County B has higher COPD hospitalizations. However, County A has a senior citizen population of 10% and County B has a senior citizen population of 40%. Using the risk adjusted rate we can compare these counties while accounting for the age differences in the population.

Table 5 - Number of PPH and the Risk Adjusted Rates, Texas, 2014

PPH Conditions	Number of Hospitalizations	Risk Adjusted Rates (95% Confidence Interval)
Diabetes Short-term	13,056	66.2 (65.0-67.3)
Diabetes Long-term	22,883	125.6 (124.1-127.1)
COPD/Asthma in Older Adults	42,323	397.3 (392.9-401.6)
Hypertension	9,945	55.8 (54.7-56.9)
CHF	57,358	348.2 (345.4-350.9)
Dehydration	22,081	130.2 (128.4-132.0)
Bacterial Pneumonia	39,843	235.5 (233.0-237.9)
UTI	31,247	187.5 (185.5-189.5)
Angina	1,712	9.6 (9.1-10.2)

Note: The four highlighted conditions were selected for FY 2016 - 2017.

Figure 3 – Risk Adjusted Rates of PPH, Texas, 2014

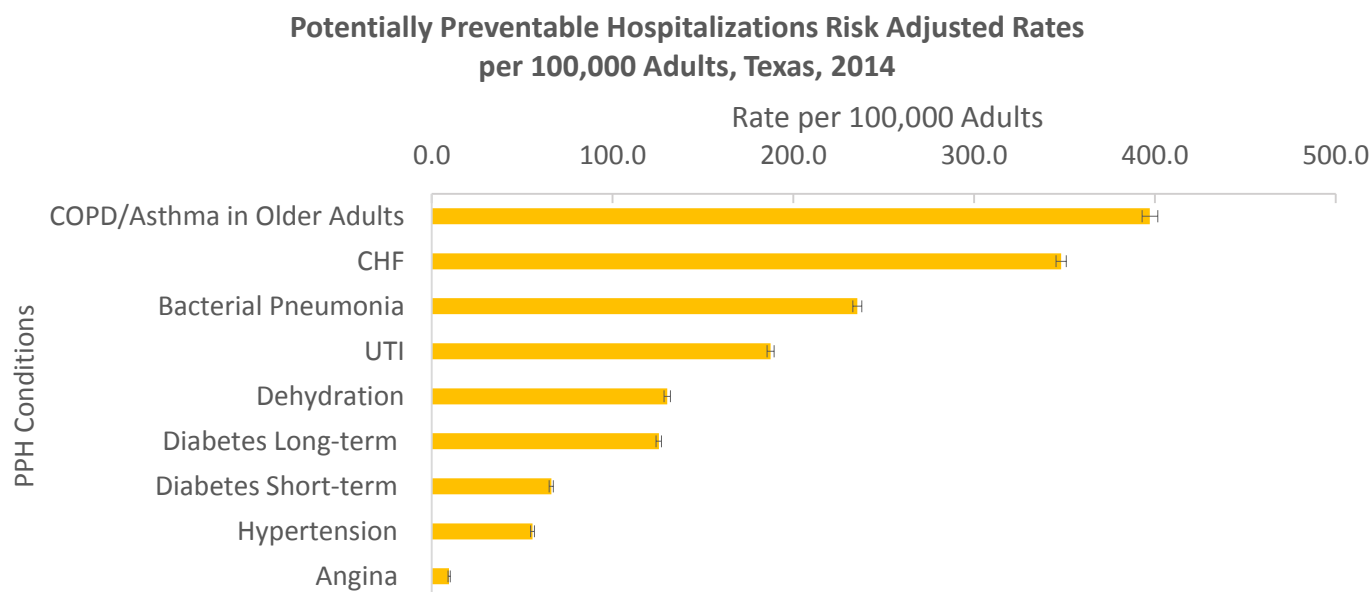
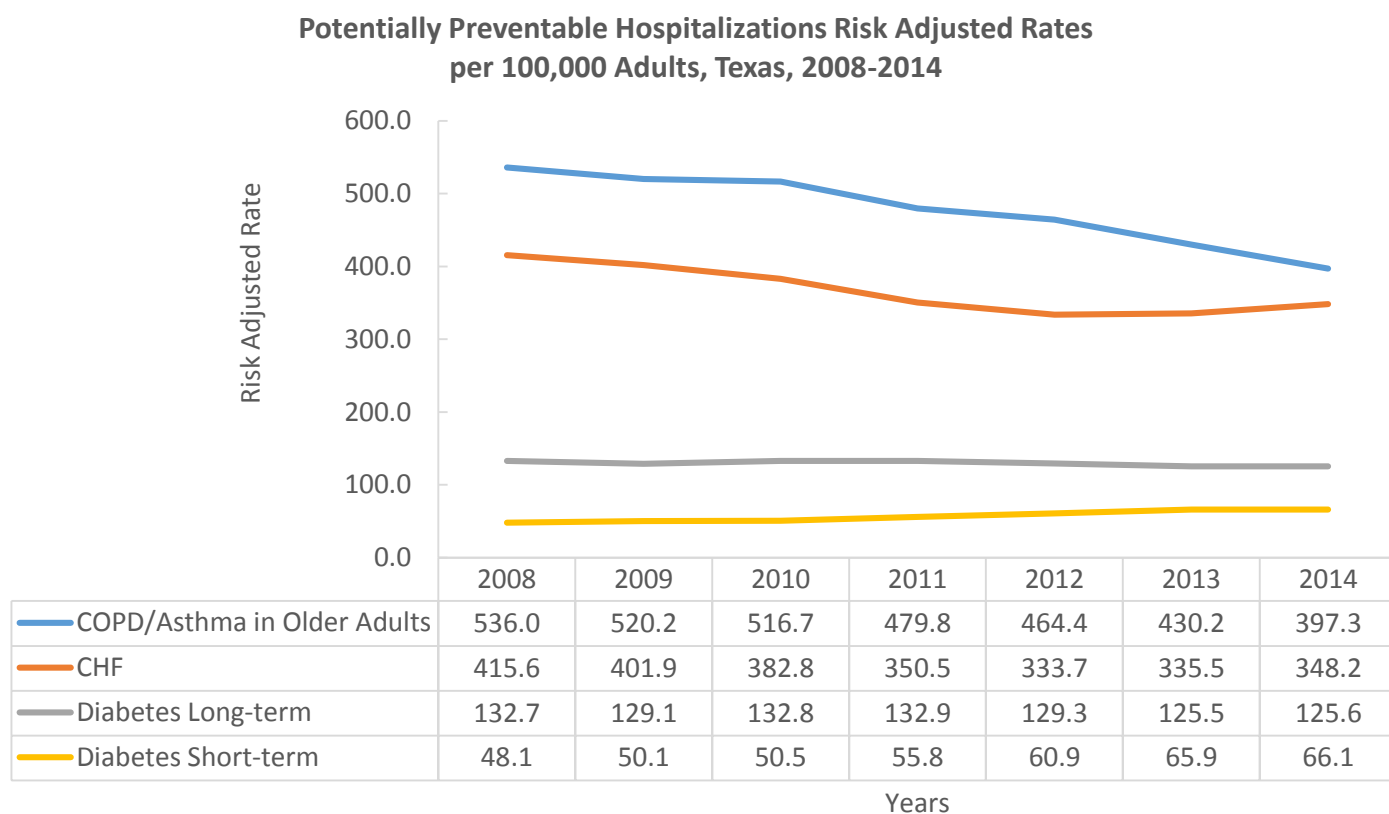
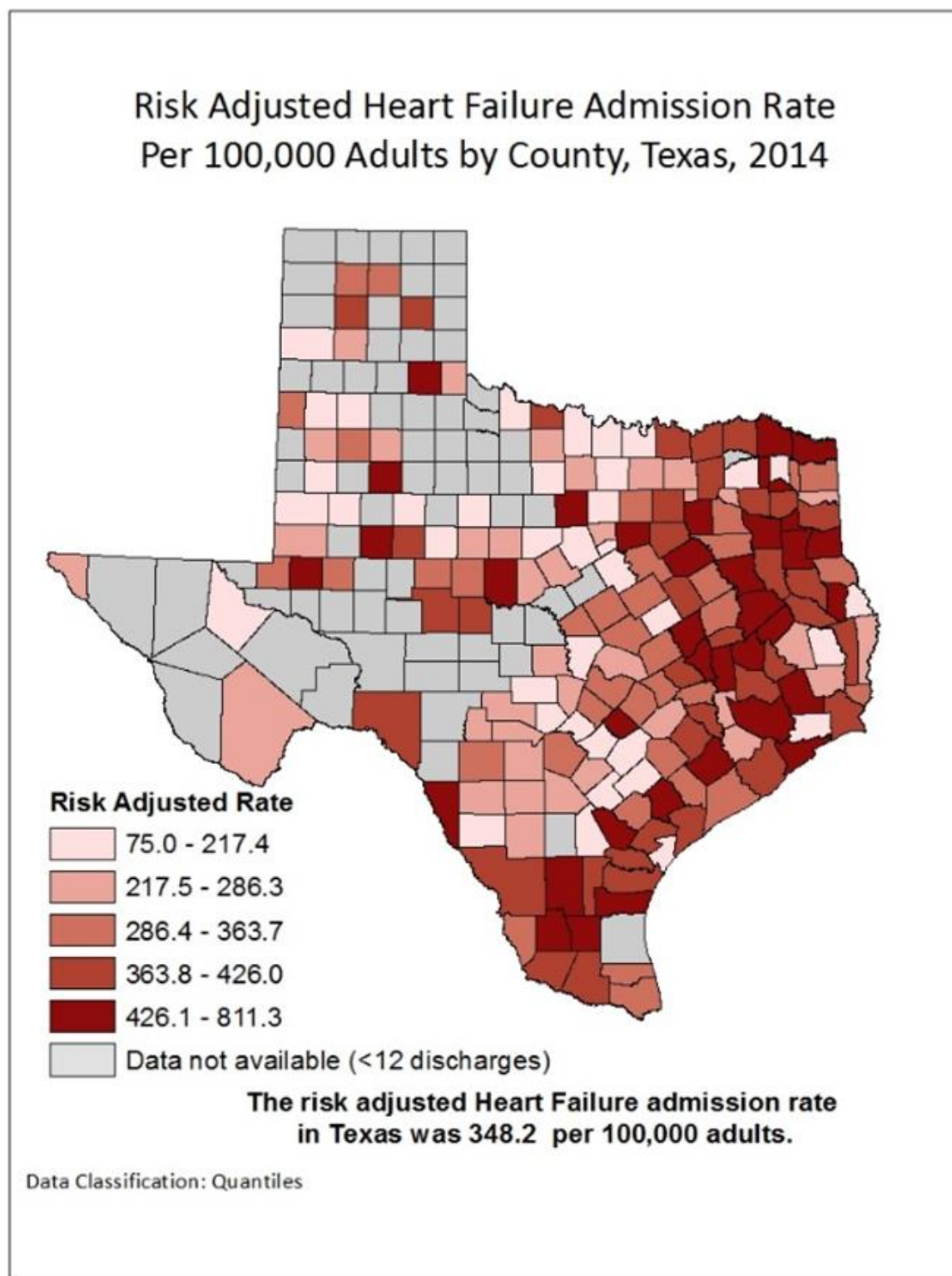


Figure 4 – Risk Adjusted Rates of PPH, Texas, 2008 – 2014

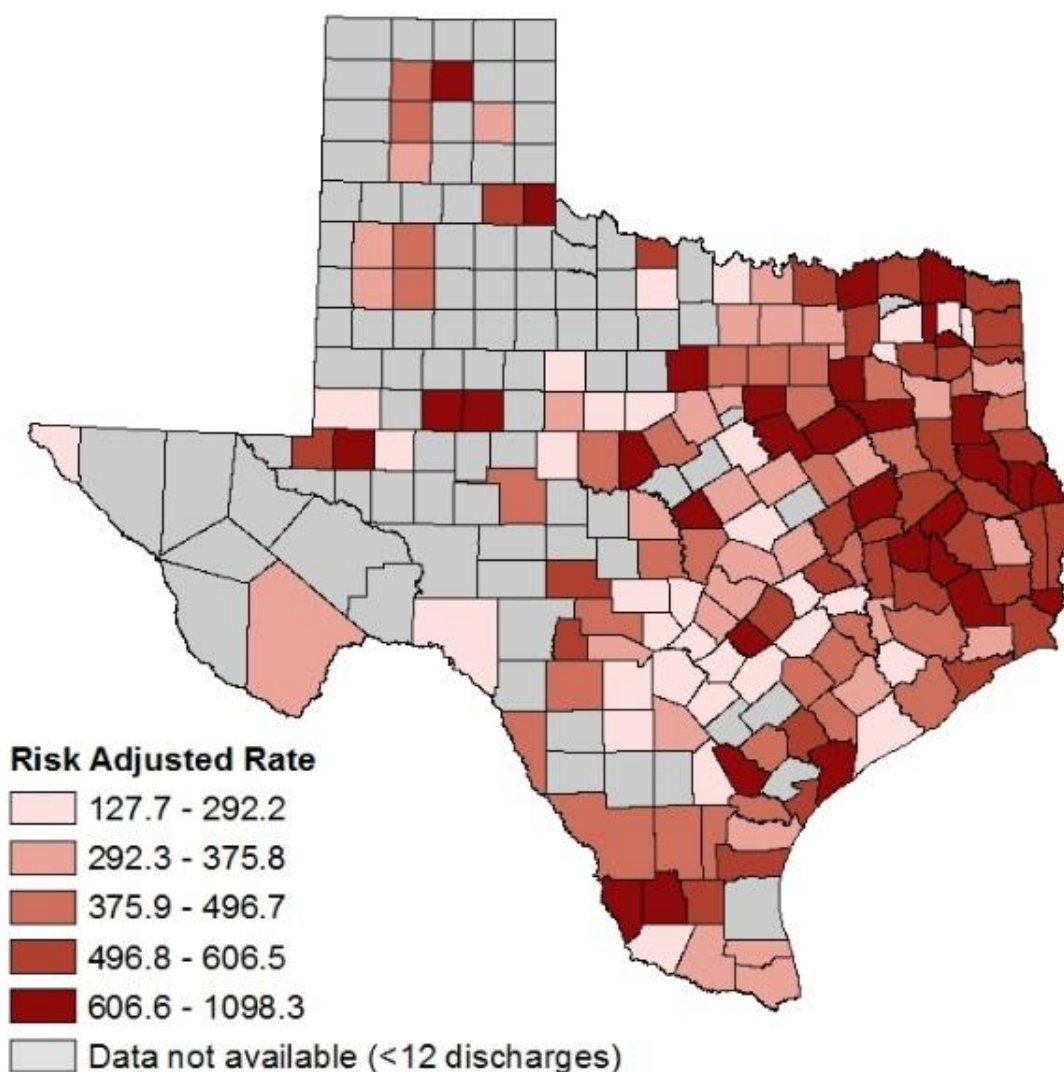


Note: The four conditions were selected for FY 2016 - 2017.

Figure 5 – Risk Adjusted Rates of PPH for 4 Selected Conditions, Texas, 2014



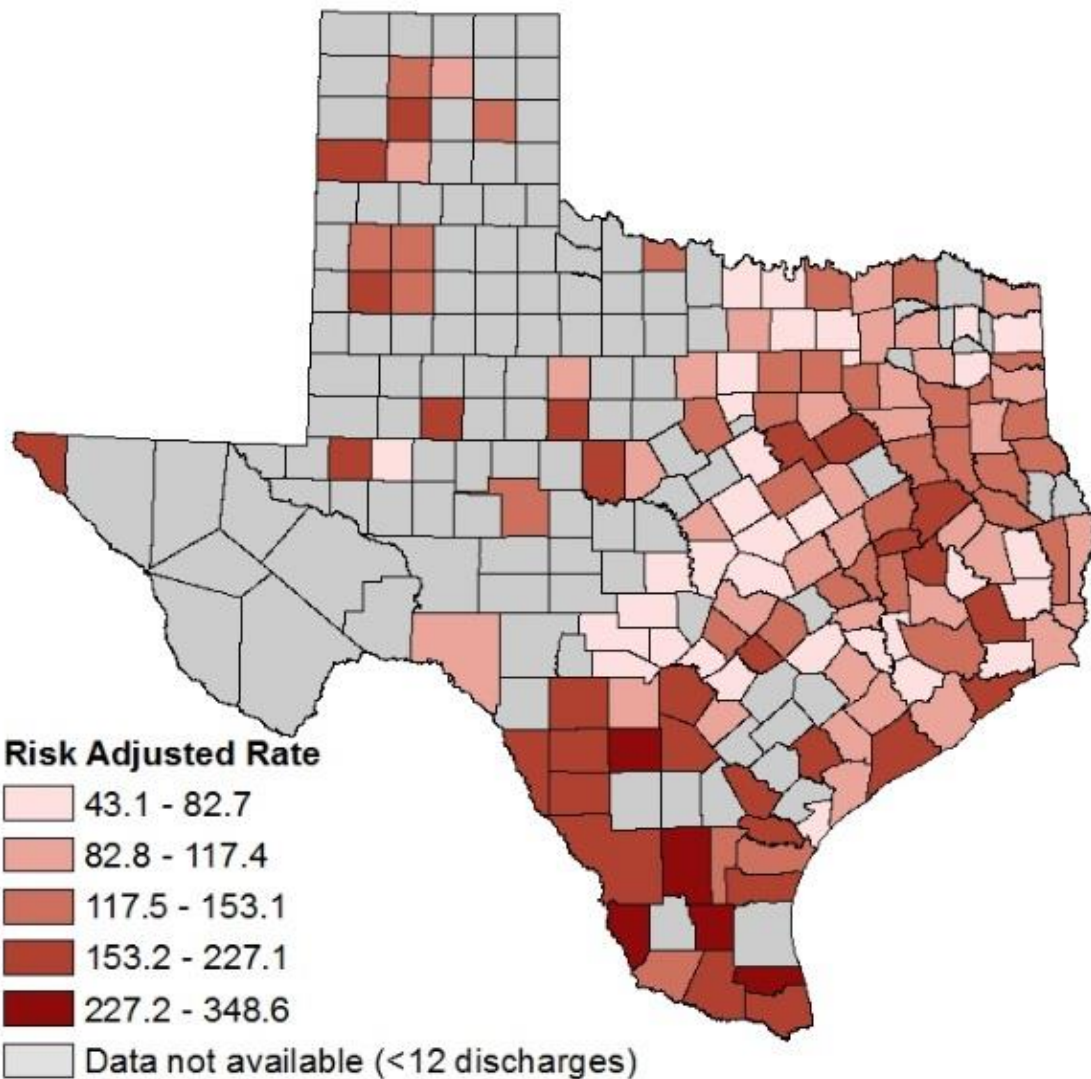
Risk Adjusted Chronic Obstructive Pulmonary Disease (COPD) or Asthma in Older Adults Admission Rate Per 100,000 Adults by County, Texas, 2014



The risk adjusted COPD or Asthma in Older Adults admission rate in Texas was 397.3 per 100,000 adults.

Data Classification: Quantiles

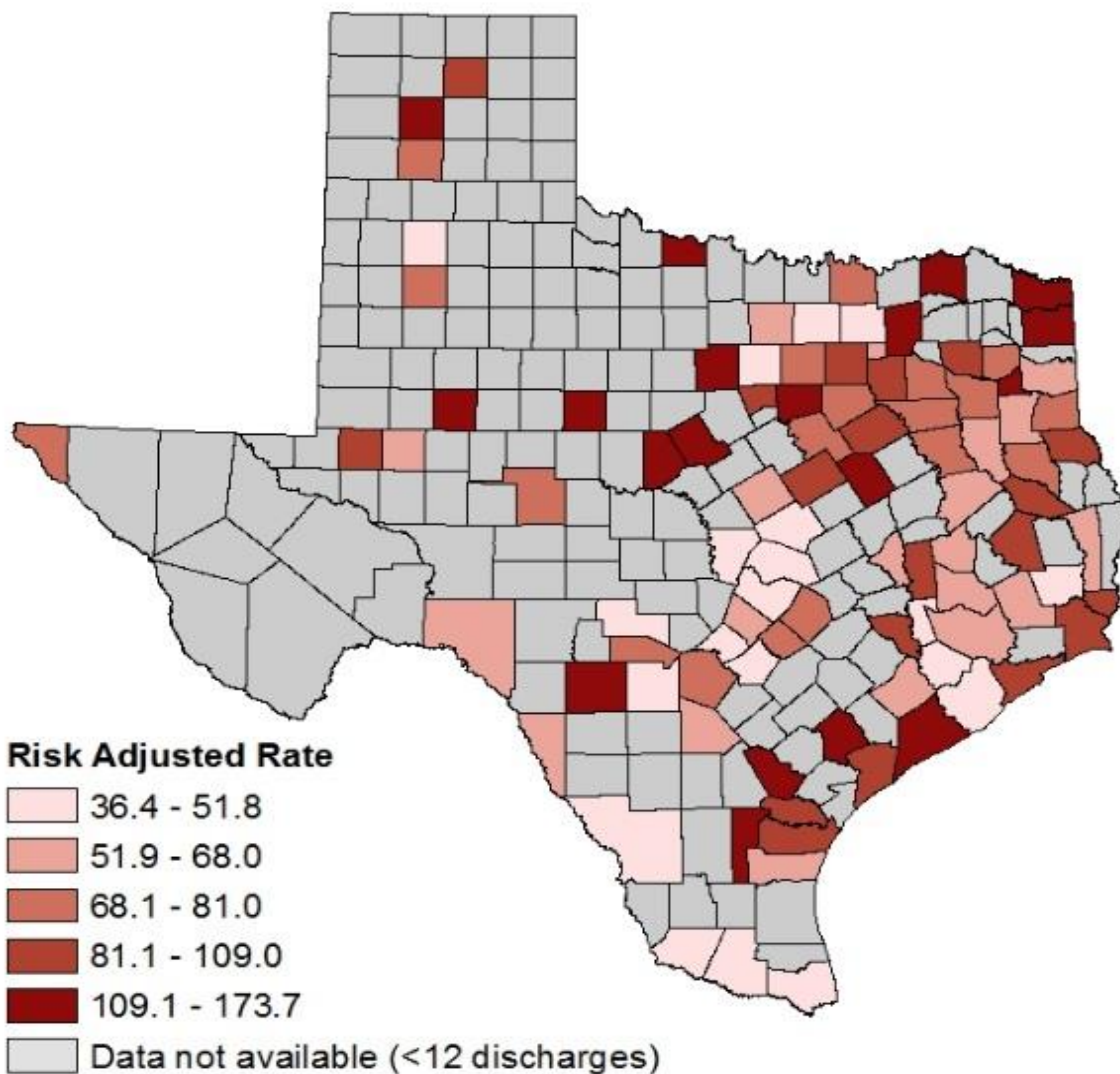
Risk Adjusted Diabetes Long-Term Complications Admission Rate Per 100,000 Adults by County, Texas, 2014



**The risk adjusted Diabetes Long-Term Complications admission rate
in Texas was 125.6 per 100,000 adults.**

Data Classification: Quantiles

Risk Adjusted Diabetes Short-Term Complications Admission Rate Per 100,000 Adults by County, Texas, 2014



The risk adjusted Diabetes Short-Term Complications admission rate in Texas was 66.2 per 100,000 adults.

Data Classification: Quantiles

Hospital Charges and Length of Stay of Potentially Preventable Hospitalizations (PPH), Texas, 2014

Table 6 – Hospital Charges and Length of Stay of PPH, Texas, 2014

PPH Conditions	Average Charge (\$)	Median Charge (\$)	Total Charge (\$)	Charge per Adult Texas Resident (\$)	Average Length of Hospital Stay (Days)
Diabetes Short-term	31,713	22,883	424,155,865	22	3.5
Diabetes Long-term	61,142	38,642	1,429,864,291	74	6.9
COPD/Asthma in Older Adults	39,047	28,390	1,695,197,226	87	4.5
Hypertension	30,546	24,445	311,604,513	16	2.9
CHF	44,474	31,770	2,619,009,730	135	5.1
Dehydration	30,129	23,092	684,942,961	35	3.8
Bacterial Pneumonia	42,863	30,198	1,758,236,908	91	5.0
UTI	29,901	23,671	953,616,435	49	4.0
Angina	32,872	28,530	58,151,267	3	2.3

Note: The four highlighted conditions were selected for FY 2016 - 2017.

Expected Primary Source of Payment of Potentially Preventable Hospitalizations (PPH), Texas, 2014

Table 7 – Expected Primary Payer of PPH, Texas, 2014

PPH Conditions	Medicaid		Medicare		Private Health Insurance		Uninsured		Other	
	N	%	N	%	N	%	N	%	N	%
Diabetes Short-term	1,781	13.3	2,890	21.6	4,275	32.0	4,086	30.6	343	2.6
Diabetes Long-term	2,015	8.6	12,007	51.3	5,223	22.3	3,654	15.6	487	2.1
COPD/Asthma in Older Adults	2,899	6.7	29,033	66.9	7,544	17.4	3,122	7.2	816	1.9
Hypertension	591	5.8	4,835	47.4	2,560	25.1	2,008	19.7	207	2.0
CHF	3,176	5.4	41,121	69.8	8,845	15.0	4,887	8.3	860	1.5
Dehydration	1,051	4.6	14,287	62.8	5,327	23.4	1,698	7.5	371	1.6
Bacterial Pneumonia	2,123	5.2	25,845	63.0	8,825	21.5	3,495	8.5	732	1.8
UTI	1,872	5.9	21,051	66.0	5,516	17.3	3,000	9.4	453	1.4
Angina	116	6.6	833	47.1	539	30.5	231	13.1	50	2.8

Note: The four highlighted conditions were selected for FY 2016 - 2017.

-- indicates less than 12 hospitalizations.

Future Recommendations

- Incorporate the percentage of each PPH condition that has a secondary diagnosis of mental illness or substance abuse.
- Include more data visualizations, specifically the bar charts such as Figure 1 and 2 to compare between demographics with PPH conditions and county population demographics that further include age groups and gender.
- Develop benchmarks for condition-specific risk adjusted rates that allow for comparisons between the benchmark and county-level data.

Technical Notes

Measure Information:

The preventable hospitalization conditions in this report were selected from the Prevention Quality Indicators created by the Agency for Healthcare Research and Quality (AHRQ). AHRQ (www.ahrq.gov) is the lead federal agency responsible for research on health care quality, costs, outcomes, and patient safety.

Each potentially preventable hospitalization condition is defined by ICD-9-CM diagnosis codes. AHRQ may change the definition for these conditions each year.

All values may not add to the total because of missing data. The number of missing values may be different for each variable.

Limitations:

- Hospitalization data are based on inpatient hospitalization and do not include emergency department (ED) visits which did not result in hospital admission.
- The Texas Hospital Inpatient Discharge Public Use Data represent the number of inpatient hospitalizations. Since the data have been de-identified and an individual can be hospitalized more than once for the same condition during the data collection period, multiple hospitalizations for the same individual and the same diagnosis cannot be distinguished.
- Texas Hospital Inpatient Discharge Public Use Data is not a complete source of information on PPH-related discharges because some hospitals in Texas are exempt from reporting requirements. This may result in an underestimation of the number of related discharges.
- Incidence rates and patterns of newly diagnosed conditions are not captured by the data in this report. Using hospitalization data, we cannot determine if a hospitalization serves as an initial diagnosis of a specific condition.
- Hospital charges are based on all charges incurred during a hospital stay for a discharge where a specific PPH condition was the primary diagnosis. Charges may not be specifically associated with PPH care and may be associated with secondary diagnoses.
- Hospital charges are not the same as hospital costs or payments.
- Race and ethnicity data are generally not collected by hospitals and may be subjectively captured.
- Race is changed to 'Other' and ethnicity is suppressed if a hospital has fewer than ten discharges of a race in a single quarter.

Related Links:

- 1) PPH Program at Texas Department of State Health Services. (<http://www.dshs.state.tx.us/ph/>)
- 2) Prevention Quality Indicators, Agency for Healthcare Research and Quality. (http://www.qualityindicators.ahrq.gov/modules/pqi_resources.aspx)
- 3) Texas Hospital Inpatient Public Use Data File (PUDF), Texas Health Care Information Collection, Center for Health Statistics. (<http://www.dshs.state.tx.us/thcic/hospitals/inpatientpudf.shtm>)
- 4) Centers for Disease Control (CDC). (<http://www.cdc.gov/>)

Additional Information:

Health Promotion and Chronic Disease Prevention Section. (<https://www.dshs.state.tx.us/chronic/>)

